

REMARKS

Claim Rejections

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Grave (U.S. Patent No. 6,039,451). Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grave (U.S. Patent No. 6,039,451). Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grave in view of Akahane et al. (U.S. Patent No. 5,931,555), hereinafter Akahane.

Amendments to Specification

Applicant has amended the Specification as noted above to cure obvious grammatical and idiomatic inaccuracies and to further describe the heat dissipation channel formed by the two neighboring light tubes respectively disposed on first vertical axis line B and second vertical axis line C. No "new matter" has been added to the original disclosure by the foregoing amendments to the Specification. See, e.g., Fig. 3 and p. 3, l. 22 -- p. 4, l. 7.

Claim Amendments

By this Amendment, Applicant has canceled claim 2 and has amended claims 1 and 4 of this application to include the limitations of canceled claim 2. Claims 1 and 4 have also been amended to better protect what Applicant regards as the invention. It is believed that the amended claims specifically set forth each element of Applicant's invention in full compliance with 35 U.S.C. § 112, and define subject matter that is patentably distinguishable over the cited prior art, taken individually or in combination.

The amended claims are directed toward: a back light module, comprising: a plurality of light tubes, being disposed on a first vertical axial line to form an arrangement of the light tubes aligning with each other vertically; and an intermediate light tube, being disposed on a second vertical axial line and between two neighboring ones of the light tubes, wherein a distance between the first vertical axial line and the second vertical line is ***greater than one fourth of a light tube diameter*** to provide a ***heat dissipation channel between two neighboring light tubes*** respectively disposed on the first and second vertical axial line.

Other embodiments of the present invention include: a flat display device, including, *inter alia*, a back light module, comprising: a plurality of light tubes, being disposed on a first vertical axial line to form an arrangement of the light tubes aligning with each other vertically; and ***an intermediate light tube, being disposed on a second vertical axial line and between two neighboring ones of the light tubes, wherein a distance between the first vertical axial line and the second vertical line is greater than one fourth of a light tube diameter to provide a heat dissipation channel between two neighboring light tubes*** disposed on the first and second vertical axial line.

Grave teaches backlight 100 having day mode light source 105 and night mode light source 110 with associated control circuitry 110, 120 and sculpted transreflector 125. The Examiner has generally cited Grave's Fig. 2-3 on p.3 of the outstanding Office Action as disclosing "a distance between the first vertical axial line and the second vertical line is greater a light tube diameter and the distance between two neighboring light tubes on the first vertical axial line is less than five times of a light tube diameter thereof (see Fig. 2 and 3)." However, as admitted by the Examiner, "Grave does not specifically disclose a distance between the first vertical axial line and the second vertical line is greater than one fourth of a light tube diameter and the distance between two neighboring light tubes on the first vertical axial line not is less than five times of a light tube diameter thereof." *Id.*

Grave does not teach: a back light module, comprising a plurality of light tubes, being disposed on a first vertical axial line to form an arrangement of the light tubes aligning with each other vertically; and an intermediate light tube, being disposed on a second vertical axial line and between two neighboring ones of the light tubes, wherein a distance between the first vertical axial line and the second vertical line is greater than one fourth of a light tube diameter to provide a heat dissipation channel between two neighboring light tubes respectively disposed on the first and second vertical axial line. Nor does the reference teach: a flat display device, including a back light module, comprising a plurality of light tubes, being disposed on a first vertical axial line to form an arrangement of the light tubes aligning with each other vertically; and an intermediate light tube, being disposed on a second vertical axial line and between two neighboring ones of the light tubes,

wherein a distance between the first vertical axial line and the second vertical line is greater than one fourth of a light tube diameter to provide a heat dissipation channel between two neighboring light tubes disposed on the first and second vertical axial line.

It is axiomatic in U.S. patent law that, in order for a reference to anticipate a claimed structure, it must clearly disclose each and every feature of the claimed structure. Applicant submits that it is abundantly clear, as discussed above, that Grave does not disclose each and every feature of Applicant's new claims and, therefore, could not possibly anticipate these claims under 35 U.S.C. § 102. Absent a specific showing of these features, Grave cannot be said to anticipate any of Applicant's new claims under 35 U.S.C. § 102.

The Examiner has also stated that, absent a showing of criticality and/or unexpected results, it would have been obvious to the skilled artisan to shift the location of the light tubes. In response, Applicant asserts that Applicant's particular staggered arrangement of the light tubes results in greatly improved heat dissipation through convection, while still allowing high light output through the use of more light tubes as compared with prior art, non-staggered axial arrangements. See, e.g., p. 3, I. 22 -- p. 4, I. 7; p. 4, II. 20-25; and Fig. 3. As a result, Applicant's invention avoids such prior art problems as inconsistent temperatures between adjacent tubes resulting in the emission of varying light output and bulb life. See, p. 3, II. 8-16. Applicant has also amended claims 1 and 4 to recite this improved heat dissipation.

Akahane et al. is cited as teaching a diffusion system for an LCD. Applicant notes that the Examiner has not cited Akahane et al. in support of the rejections of claim 2 (now cancelled with the limitations being included in claims 1 and 4). As noted above, all claims now recite the limitations of former claim 2. As a result, no specific response to Akahane et al. is deemed necessary.

In any event, Applicant does not believe Akahane et al. teach: a back light module, comprising a plurality of light tubes, being disposed on a first vertical axial line to form an arrangement of the light tubes aligning with each other vertically; and an intermediate light tube, being disposed on a second vertical axial line and between two neighboring ones of the light tubes, wherein a distance between the first vertical axial line and the second vertical line is greater than one fourth of a light

tube diameter to provide a heat dissipation channel between two neighboring light tubes respectively disposed on the first and second vertical axial line. Nor does the reference teach: a flat display device, including a back light module, comprising: a plurality of light tubes, being disposed on a first vertical axial line to form an arrangement of the light tubes aligning with each other vertically; and an intermediate light tube, being disposed on a second vertical axial line and between two neighboring ones of the light tubes, wherein a distance between the first vertical axial line and the second vertical line is greater than one fourth of a light tube diameter to provide a heat dissipation channel between two neighboring light tubes disposed on the first and second vertical axial line.

Even if the teachings of Grave and Akahane et al. were combined, as suggested by the Examiner, the resultant combination does not suggest: a back light module, comprising: a plurality of light tubes, being disposed on a first vertical axial line to form an arrangement of the light tubes aligning with each other vertically; and an intermediate light tube, being disposed on a second vertical axial line and between two neighboring ones of the light tubes, wherein a distance between the first vertical axial line and the second vertical line is greater than one fourth of a light tube diameter to provide a heat dissipation channel between two neighboring light tubes respectively disposed on the first and second vertical axial line.

Nor does the combination suggest: a flat display device, including a back light module, comprising a plurality of light tubes, being disposed on a first vertical axial line to form an arrangement of the light tubes aligning with each other vertically; and an intermediate light tube, being disposed on a second vertical axial line and between two neighboring ones of the light tubes, wherein a distance between the first vertical axial line and the second vertical line is greater than one fourth of a light tube diameter to provide a heat dissipation channel between two neighboring light tubes disposed on the first and second vertical axial line.

Neither Grave nor Akahane et al. disclose, or suggest a modification of their specifically disclosed structures that would lead one having ordinary skill in the art to arrive at Applicant's claimed structure. Applicant hereby respectfully submits that no combination of the cited prior art renders obvious Applicant's amended claims.

Summary

In view of the foregoing amendments and remarks, Applicant submits that this application is now in condition for allowance and such action is respectfully requested. Should any points remain in issue, which the Examiner feels could best be resolved by either a personal or a telephone interview, it is urged that Applicant's local attorney be contacted at the exchange listed below.

Respectfully submitted,

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